CLAIMS

1. A display element, comprising:

a pair of substrates which are opposed to each other; and

a substance layer sandwiched between the substrates,

the display element performing display operation by applying an electric field to between the substrates,

the substance layer including a liquid crystalline medium exhibiting a nematic liquid crystal phase, and exhibiting an optical isotropy when no electric field is applied, while exhibiting an optical anisotropy when an electric field is applied,

wherein:

$\Delta n \times |\Delta\varepsilon| \geq 1.9$,

where Δn is a refractive index anisotropy at 550nm in a nematic phase of the liquid crystalline medium exhibiting the nematic liquid crystal phase, and $|\Delta\varepsilon|$ is an absolute value of a dielectric anisotropy at 1kHz in the nematic phase of the liquid crystalline medium exhibiting the nematic liquid crystal phase.

2. The display element according to claim 1, wherein:

$\Delta n \geq 0.14$ and $|\Delta\varepsilon| \geq 14$.

3. The display element according to claim 1, wherein:

$\Delta n \times |\Delta\varepsilon| \geq 4.0$.

4. The display element according to claim 3, wherein:

$\Delta n \geq 0.2$ and $|\Delta\varepsilon| \geq 20$.

5. The display element according to claim 1, wherein:

$\Delta\varepsilon$ is negative.

6. The display element according to any one of claims 1 to 5, wherein:

an orientation auxiliary material is provided between the substrates, the orientation auxiliary material functioning to promote exhibition of an optical anisotropy by application of the electric field.

7. The display element according to claim 6, wherein:

the orientation auxiliary material is formed in the substance layer.

8. The display element according to claim 7, wherein:

the orientation auxiliary material has a structural anisotropy.

9. The display element according to claim 7, wherein:

the orientation auxiliary material is formed in a state

where the liquid crystalline medium in the substance layer is in a liquid crystal phase.

10. The display element according to claim 7, wherein:

the orientation auxiliary material is made of a polymerizable compound.

11. The display element according to claim 7, wherein:

the orientation auxiliary material is made of a polymer compound.

12. The display element according to claim 11, wherein:

the orientation auxiliary material is made of at least one polymer compound selected from the group consisting of a chain polymer compound, a network polymer compound, and a cyclic polymer compound.

13. The display element according to claim 7, wherein:

the orientation auxiliary material is made of hydrogen bonding material.

14. The display element according to claim 7, wherein:

the orientation auxiliary material is made of porous material.

15. The display element according to claim 7, wherein:

the orientation auxiliary material divides the liquid crystalline medium in the substance layer into small regions.

16. The display element according to claim 15, wherein:

the small region has a size of not more than a visible light wavelength.

17. The display element according to claim 7, wherein:

the orientation auxiliary material is a horizontal alignment film which is provided in at least one of the substrates.

18. The display element according to claim 17, wherein:

the horizontal alignment film is subjected to rubbing treatment or light irradiation treatment.

19. The display element according to claim 18, wherein:

the horizontal alignment film is provided in each of the substrates, and is arranged so that rubbing directions in the rubbing treatment or light irradiation directions in the light irradiation treatment are parallel or antiparallel to each other.

20. The display element according to claim 19, wherein:

said display element satisfies $\lambda/4 \leq \Delta n \times d \leq 3\lambda/4$ where d (μm) is a thickness of the substance layer, and λ (nm) is a wavelength of incident light.

21. The display element according to claim 18, wherein:

the horizontal alignment film is provided in each of the substrates, and is arranged so that rubbing directions in the rubbing treatment or light irradiation directions in the light irradiation treatment are orthogonal to each other.

22. The display element according to claim 21, wherein:

said display element satisfies 350 (nm) $\leq \Delta n \times d \leq$ 650 (nm) where d (μm) is a thickness of the substance layer.

23. The display element according to any one of claims 1 to 5, wherein:

the substance layer further includes particulates sealed therein.

24. The display element according to any one of claims 1 to 23, wherein:

the substance layer has sealed therein a medium whose refractive index changes proportionately with square of an electric field.

25. The display element according to any one of claims 1 to 24, wherein:

the substance layer has sealed therein a medium containing polar molecules.

26. The display element according to any one of claims 1 to 25, wherein:

the substance layer takes a twisted structure with only one chirality.

27. The display element according to any one of claims 1 to 26, wherein:

the substance layer has sealed therein a medium exhibiting chirality.

28. The display element according to any one of claims 1 to 27, wherein:

the liquid crystalline medium has a selective reflection wavelength band or a helical pitch of not more than 400 nm.

29. The display element according to any one of claims 1 to 28, wherein:

the substance layer is a dielectric substance layer made of a dielectric substance.

30. The display element according to any one of claims 1 to 29, further comprising:

electric field applying means which produces an electric field in a substrate surface normal direction to the substrates so as to apply the electric field to the substance layer.

31. A display device including the display element according to any one of claims 1 to 30.